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HYPEREMIA

OF THE

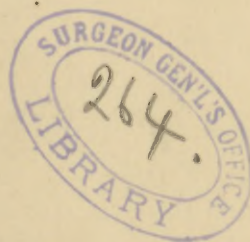
VESICO-URETHRAL MEMBRANE

BY ✓

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HYPEREMIA OF THE VESICO-URETHRAL MEMBRANE.

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Boston.

THE operation of cystotomy, in the treatment of chronic cystitis and vesical ulceration, has been well established, and the great benefits derived from this method of procedure in preventing stagnation and decomposition of urine in the diseased organ have been almost universally recognized. A resort to this operation, however, in the treatment of chronic localized urethritis, or of some other forms of intractable urethral disease, as practiced by Dr. Emmet and advised by Dr. Skene, has been less generally adopted, while in no case that I have seen reported has the formation of a vesico-vaginal fistula been recommended in the peculiar state of vascularity of the neck of the bladder to which I would now call your attention.

The state of hyperemia of the vesical neck is a usual accompaniment of cystitis in either its acute or chronic form, but is less frequently present in an uncomplicated case of urethritis; this condition of increased vascularity, however, limited to the vesico-urethral junction, unaccompanied by disease of either the bladder or urethra, or even by any ulceration, fissure, or swelling of the mucous membrane at the point of increased blood supply, is in my experience a rare circumstance, but in such few instances a most important one to recognize, and often demanding the most decided and active treatment for its relief. I would not have you understand that by this hyperemic state I refer to a hemorrhoidal condition of the part, for there is no such collection of veins present in the class of cases referred to;

neither should it be confounded with the general hyperemia found in the swollen, injected membrane of a localized urethritis of this point. The cases of vesico-urethral hyperemia to which I would limit the considerations of this paper are those where, the mucous membrane of the bladder and the urethra being perfectly healthy except at the point of their junction, there exist at this last-mentioned site a few tortuous blood-vessels running over an otherwise healthy membrane. These blood-vessels are evidently veins, as the most careful examination fails to discover in them the least pulsation. It seems almost incredible that so slight a deviation from a normal condition should create so great a disturbance to the nervous system and cause so much local pain as I have seen present, yet the result obtained in the cases which I shall introduce would seem to prove the importance of the lesion; and when we remember the suffering oftentimes endured by those in whom a slight fissure exists at this highly sensitive point, we shall be less likely to underrate the importance of the present subject.

The predisposing causes would seem to be: *First*, a very thin and delicate mucous membrane; as such are less tolerant, even in certain variations within the limits of health. *Second*, a highly developed nervous system; for in such an individual we always see the possibilities of hyperemia the greatest, since here the stronger stimulus which is possible, conveyed through the influence of the vaso-dilator nerve fibres, tends at once to increase the amount of blood in the part to which these fibres are distributed, and in the case in point the hyperemia may be otherwise aggravated by the nearness of the blood-vessels to the seat of irritation. *Third*, a state of neurasthenia; for here the nervous system, being continually fatigued, fails to give the proper amount of tone to the vaso-contractor nerve fibres, and thus an excess of blood is supplied to the part, which, increasing as it does the irritability of the neck of the bladder, keeps up or even intensifies the neurasthenic condition. In this way it may not only be the cause, but likewise become an effect of, the hyperemia. *Fourth*, a continued habit of constipation

should be mentioned in this connection, as it interferes with the free venous return, and thus occasions blood stasis throughout all the pelvic viscera.

Prominent among the exciting causes are acute diseases of the bladder or urethra; instrumentation of the urinary passages; prolonged retention of the urine; frequent spasms of the neck of the bladder, as are often present in some abnormal condition of the urine, or dependent on nervous excitation; violence or increased congestion, resulting from the newly married state; and onanism. Nearly all of these, acting either by direct injury or by determining an increased flow of blood to the part, may at once become the immediate cause of this affection.

The symptoms are more nearly like those present in cystitis than in any other disease. There is the same frequent desire to urinate, although in a much more aggravated form than I have ever seen in that disease, the patient often being obliged to pass urine from twenty to thirty times during the night, and quite as many times through the day, until she becomes completely worn out from want of rest, and resorts to opium in some form to obtain it. There is the same sensation of scalding in passing the urine that is present in an acute attack of cystitis. Unlike that disease, however, there is not the continued sense of weight and fullness in the pelvis; and slight jars of the body, as in riding or in taking a misstep, or even a person walking heavily across the room, is not complained of. In fact, the patient is usually able to be about the house, and would venture out of doors were it not for the fear that within a few moments she must empty the bladder, and the knowledge of the great suffering to which she would be exposed if she should be where she could not find immediate relief. Another symptom sometimes present is the manner in which the urine is passed; for after a few drops have been expelled a spasm of the neck of the bladder occurs, and her suffering is almost intolerable until the remainder of the urine passes, and the straining which she then exercises tends really to increase the hyperemia at the

site of the disease. This spasm may be repeated two or three times before the whole of the urine is passed, while the great suffering of the patient, together with all the efforts which are likely to be made in hot applications, changes of position, and the like, so fatigue her that finally, when the act is accomplished, she is so exhausted and unnerved that she may cry, or not unfrequently a hysterical convulsion may follow. These severer times are more apt to ensue if the patient has delayed passing the urine for a longer time than usual, on account of some person being present that she felt she could not leave from a delicacy of feeling, or if she was where she could not reach a suitable place to relieve herself. Experience of such times of increased suffering tends to keep the patient confined to her own home, if not to her room, and thus her general health is seriously impaired, while her nervous strength becomes literally a complete wreck. The urine itself shows no change other than that we should expect to see present in a patient who had become so hysterical : that is, at one time a greatly increased quantity of pale dilute urine, while at another time a small quantity of dark concentrated fluid ; no pus, no unnatural amount of mucus, no sugar or albumen, no excess of crystalline deposit, not strongly acid ; in fact, the most careful examination of the urine, both chemical and microscopical, fails to reveal any change from a perfectly normal character. Sometimes, however, we find a patient with the above-described trouble laboring under the misconceived idea that because it causes her such pain to urinate she must drink very little, if any, of even the most bland fluids ; but this only aggravates the symptoms by inducing a too concentrated urine, which in itself becomes irritating, and which, added to her other difficulties, increases her distress. Guided by these symptoms we might fall into error, and confound the case with one of chronic contraction of the bladder, and thus be led to institute a course of treatment, like gradual dilatation of that viscus by injections or by a prolonged retention of the urine, which would be not only non-beneficial but decidedly injurious. Nothing but the

most carefully conducted physical examination will enable us to make sure the diagnosis, by which alone we can hope to treat the case at all satisfactorily.

For the purpose of examination the patient should be first touched bimanually, which will reveal no real sensitiveness except at the seat of the disease; an apparent hyperesthesia, however, may be present, generally distributed over the whole abdomen, and involving all the organs of the pelvis; a little care in the manipulation, at the same time diverting the mind of the patient, will enable us to exclude this sign of disease and to narrow its limits to the neck of the bladder, the true seat of the difficulty. The result obtained by the passage of the probe or sound into the bladder will be very similar to that where fissure exists at the same site; no marked tenderness is found until the instrument touches the seat of the trouble, but then the most excruciating pain is generally created, occasioning a spasm of the part, which usually grasps the instrument so tightly that it becomes impossible to remove it without doing great injury to the mucous membrane and causing greatly increased suffering; by waiting a few moments the spasmodic action subsides, and the instrument may be carefully removed. For this reason I have utterly failed in making a satisfactory exploration with the endoscope, except the patient be fully etherized; but by its use, the anesthetic having been administered, the most perfect inspection can be made and exact diagnosis established. For properly conducting such an examination the patient should be on the table in the lithotomy position and fully etherized; the room should be made absolutely free from all sunlight, and the gas jet or light from the student or ordinary kerosene lamp placed at the side of her hips, or in the same relative position that the oculist places it for observing the retina; a Skene's endoscope is then lubricated and carefully passed through the urethra into the bladder, the rays of light being collected by an aural mirror upon the forehead and directed into the instrument. In this way the hands are left free to manip-

ulate it, and, an assistant on either side holding away the labia, the most minute exploration of the urethra and neck of the bladder can be made. The endoscope mentioned is by far the best one for this examination ; it is so simple in its construction and easily adjusted that any surgeon possessing a reasonable amount of delicacy of manipulation can use it readily. Before I was familiar with this most valuable instrument I made use of the smaller sizes of Simon's urethral plugs for dilating the urethra, and was able to make a very satisfactory exploration by their use ; the manipulation differing in that the urethral plug was first passed into the bladder, and, the inner plug being then removed, as the outer part or speculum was gradually withdrawn, the mucous membrane closing in over its end was subjected to the reflected light and thus carefully inspected. This was accompanied by considerable inconvenience, while viewing the vesical neck, by the flow of urine which would occasionally pass through the speculum, a difficulty that is entirely obviated by using Skene's instrument, which possesses the great advantage also of observing each portion of the urethra and neck of the bladder as the endoscope is introduced, thus enabling the surgeon to see each part before it has been disturbed by any other instrumentation, thereby determining its more exact appearance.

After examining in this way a large number of cases where no complaint was made, and comparing them with the cases under consideration as well as with those where other diseases of the urethra and bladder were present, I have made, by the aid of Dr. H. P. Quincy, the following cuts as illustrative of the disease in question, and of the normal appearance of the neck of the bladder ; also, by way of comparison, two cuts showing a healthy and diseased state of the bladder itself, as distinguishable from this hyperemia of the vesico-urethral membrane. In illustrations Nos. 1 and 2 the endoscope must be understood to be just opening the neck of the bladder, a small portion of bladder membrane falling against its end, while in Nos. 3 and 4 the instrument is passed nearly into that viscus, thus



Fig. 1.
HEALTHY VESICO—URETHRAL
MEMBRANE.



Fig. 2.
HYPEREMIA OF THE VESICO—
URETHRAL MEMBRANE.



Fig. 3.
HEALTHY BLADDER.
Membrane seen through the dilated
Urethra.



Fig. 4.
CHRONIC CYSTITIS.
Seen through the dilated Urethra.

showing a much larger field of bladder membrane and but a small rim of urethral membrane.

It must be evident to all that this disease cannot be diagnosed except by the most carefully conducted physical examination.

Before entering upon the subject of the treatment of this affection I would not have it understood that I advise a resort to the proposed operative interference for every case of irritability of the neck of the bladder, even though this state of hyperemia be found present, for I have no doubt that very many cases in an acute form occur and are recovered from, either unaided or by the use of some mild medication. All must recognize the readiness with which hyperemia of one part of the body or another is produced and relieved in the neurasthenic patient. It is in the chronic form of this disease, when the inefficiency of such medication has been proved, and the want of success which has followed the milder methods of local treatment, that I would urge the importance of recognizing the difficulty under consideration, and the institution of the operation to be advised, for fear that so slight a deviation from a normal appearance should be overlooked, and thus the patient be allowed to suffer on indefinitely and unnecessarily.

The treatment consists, *first*, in putting the part absolutely and at once at rest, and thus relieving the great distress of the patient; and, *second*, in using such means as shall hasten the disappearance of the hyperemia. If we try to change the order of these steps we shall prolong and intensify her suffering, for it is utterly impossible for her to begin to improve until she can be relieved of the tremendous nervous strain dependent upon the pain and wearing fatigue accompanying the frequent micturition. Rest, then, becomes a matter of the first consideration, and this is best given by the formation of a vesico-vaginal fistula. If the question arise whether this rest can be accomplished by the use of opium, and thus the second step taken without subjecting the patient to the inconvenience naturally resulting from the operation suggested, I would answer that in most

of these chronic cases this drug has already been resorted to for the relief of the pain, and in all probability in such quantities as to be most decidedly objectionable on account of still farther undermining the nervous strength. And if this habit had not been formed, or even only a moderate amount of the drug taken, I should still object to its use on the grounds of its tending to constipate and to diminish the secretion of the urine, thus concentrating it, and also of the length of time which it would have to be continued and increased before any change for the better could at the most be hoped for. I am well aware of the relief which a patient thus afflicted may realize temporarily from the use of this drug, and of the courage and hope which are thus given to both physician and patient; but I am as well aware of the discouragement and sorrow which are sure to follow when its use is discontinued, or its amount diminished, as I am also aware of the impossibility of relieving this hyperemic state, when thoroughly established, in any other way than by first putting the neck of the bladder at rest. While the urethra is used each few moments for the passage of the urine, and its upper extremity subjected to the straining, spasms, and pain which accompany such use, any attempt to overcome the difficulty by topical applications can only tend to irritate and excite into such spasms all the more, and the disease as well as the suffering is increased thereby. If, on the other hand, we hope to spare the patient operative interference by the adjustment of some form of self-retaining catheter, thus keeping the bladder always empty, we are, I believe, subjecting her to increased dangers; for although the neck of the bladder may, after a time, become tolerant of the presence of the instrument, still it can but tend to increase the hyperemia at the seat of the disease, which is usually the part depended upon for the retention of the catheter; and were this not the case, the bladder in its emptied state tends to fall against that portion of the instrument which projects into it, and by this friction produce a cystitis. But it may be argued that if she remains quietly at rest in bed this irritation is

either entirely absent or at least reduced to the minimum ; to which I would reply that the system is already reduced to a low state by the long invalidism, both physically and mentally, and it is all important that she should be out of doors, walking and riding and surrounded by pleasant scenes and cheerful company, that the appetite may be improved, the proper tone and strength given to the muscles, and all the processes of the body go on more healthfully ; for by these means alone shall we restore the body and mind to their normal state. The draining the bladder into the vagina then becomes at once the most sure and speedy method of putting the diseased part at rest. This is best done after the plan devised and practiced by Dr. T. A. Emmet, which consists in introducing a sound into the bladder, and making the vesico-vaginal septum tense by pressing its point against the membrane just within the neck of the bladder ; the patient being in the left semi-prone position, and the vagina exposed with the Sims' speculum, the point of the sound is then cut down upon with bistoury or scissors until its point comes through into the vagina in the median line ; with a tenaculum the bladder membrane is then seized at the lower angle of the wound and held tightly forwards, while, with a pair of straight scissors, the division is carried upwards for about an inch and a half. Care must be taken that one blade of the scissors enters the bladder, and that both vaginal and bladder membranes are divided, for it otherwise will not infrequently happen that one blade will be inserted between these membranes and thus only the vaginal one be cut. The edges of the vaginal and bladder membranes are then to be united by suture all around the incision ; for this purpose I prefer to use cat-gut, sewing it over and over, as it does not require to be disturbed subsequently, and as the salts of the urine are less likely to be deposited on it. The patient is to be kept in bed for a few days until the edges have united. Napkins are to be used to take up the urine until she begins to move about, when some one of the various urinals can be adjusted for collecting it. The patient does not always

realize the full relief from this operation until she is able to move about, as it sometimes happens that while lying in bed either the swelling of the tissues around the fistula tends to close it, thus allowing a sufficient amount of urine to collect in the bladder, which, pressing against the hyperemic neck, occasions the same pain as formerly complained of, or that the posterior vaginal wall is pressed so tightly against the fistula as to have the same effect in closing it. If this latter cause be present a slight change of position is sufficient to relieve the pressure and allow the urine to flow freely; this method of relief she soon finds out for herself, and generally makes use of it before there is time for its suggestion. After the edges of the fistula have healed she is to be taught to pass the forefinger through it, which she is instructed to do once each day in order to keep it well open. This method of keeping the fistula patent is far preferable to any of the devices of studs or tubes, which serve for a point of deposit for the salts of the urine, and thus become a source of irritation. The fistula must be carefully watched until its edges are thoroughly healed, and if any phosphatic deposit appears it must be at once scraped away and an application made to the denuded surface of a solution of nitrate of silver.

The first step having been taken, and the diseased part put at rest, let us consider what may be done still farther to facilitate the disappearance of the hyperemia. The proper use of hot water will accomplish the greatest amount of good, and to be most beneficial should be applied directly to the diseased spot for a length of time. This is best done by the patient lying on the bed-pan, with the hips raised a little higher than the shoulders, in order that as much as possible of the water may be retained in the vagina and bladder, as well as to prevent any straining effort, which is least likely in that position. A fountain syringe should be provided, which is less liable to carry air into the bladder, filled with water at a temperature of from 105° to 110° , and placed at a height that will require twenty minutes for it to empty itself, and fitted with a small straight

nozzle of metal or hard rubber, which should be a quarter of an inch shorter than the urethra and made perfectly smooth on its surface. We thus have a means of applying heat to the neck of the bladder without disturbing the part; for the nozzle, introduced its whole length, is not able to reach the diseased spot, and the force of the water is sufficient to open the remaining quarter of an inch of the urethra, and finds an exit through the bladder and fistula into the vagina; all of this the patient may be taught to accomplish properly. After using the hot water in this way for two or three weeks, we can add to it a very little alum, tannin, or zinc, and thereby gain an additional effect from their astringent action; but if the solution is at all strong it will occasion a return of the pain. This treatment must be persisted in for several months, four or six at least, or until all evidence of the hyperemia has disappeared, as shown by examination with the endoscope; or the tolerance of the neck of the bladder may be tested by discontinuing the opening of the fistula by the passage of the finger, when it will become so small within two or three weeks that a large part of the urine will be passed through the urethra, particularly at night or after lying down. When it is thus proved that the diseased part is restored to its normal state, we may consider the expediency of closing the fistula. The tendency will be to resort to this operation too quickly; for the inconvenience of the patient in being continually wet and of wearing urinals will cause her to urge it, and the surgeon, seeing the greatly improved condition of his patient, will be likely to yield to her entreaties. Before closing the fistula there are two things to be considered: *first*, the permanent establishment of the nervous strength, so that the operation will not prove too great a strain for it, and thus one of the causes of a relapse be instituted; and *secondly*, the full restoration of the physical strength, or, in other words, that the patient should be in a good state of health, in order that the union of the denuded surfaces of the fistula may be insured when the operation is performed. The latter of these considerations will probably be accom-

plished long before the former, for we all know how long a time is required to recover nervous strength, and the still longer time necessary for its permanent establishment. If, after carefully weighing these considerations in our mind, we decide that it is proper to close the fistula, there are but two points that I would urge the importance of in its performance and in the subsequent care, namely, placing the sutures very thick, at least a third more than would ordinarily be used, and doing away with the use of the catheter afterwards. By these means the wound will be better able to bear the strain of the bladder expelling its contents, and there will not be the irritation of the catheter to tend to reproduce the disease.

There are two points, however, that I have failed to speak of which are of great importance in securing comfort to the patient, thereby insuring nervous quietude during the time that the fistula is kept open: these are the collection of the urine and the care of the skin. There is no style of urinal which can be applied to every case: in one Skene's would work admirably; in another the same instrument would press against the tender neck of the bladder and be not only intolerable but harmful. In another case the external soft rubber urinal would be most comfortable and unirritating to the skin of the groins and inner portions of the thighs, usually its greatest objections; while in still another case neither of the above-mentioned can be used, and the ingenuity of the surgeon may be taxed to the utmost in the proper adjustment of some form of urinal to make the condition of his patient more bearable. I am well aware that among the working class suffering from vesico-vaginal fistula there is comparatively little inconvenience from the use of napkins to catch the urine, but the wealthier classes will not be content with this means. In the latter class the nervous system is much more highly developed, and the effect of this is often seen when that system is debilitated by the greatly increased amount of urine which is secreted. In such a case I have repeatedly seen over a hundred large, thickly

folded napkins wet through and through in a single night, thus keeping a laundress busily engaged continuously in providing napkins for the patient. A urinal which I have devised and used with good results in some cases is composed of an ordinary Meigs ring pessary, with a funnel-shaped portion of pure rubber sheeting cemented to it, the upper part of the cone encircling the pessary, while to its lower end or apex is cemented a piece of ordinary rubber tubing; the upper end of this tubing should pass into the cone nearly to the top, and its sides perforated like a drainage tube, thus preventing its being occluded by bending, and the lower end of the tube is to be attached to a rubber receptacle which is strapped to the leg. This cone should be longer behind than in front, in order to more nearly conform to the vagina. Figure 5 will serve to illustrate this urinal.



FIG. 5.

By some such device we can often make our patient comparatively comfortable, or at least reduce the necessary inconvenience to the minimum. The condition of the skin will need constant attention, particularly if napkins or the external soft rubber urinal are used. Frequent bathing and applying oxide of zinc ointment or vaseline to the exposed surfaces, with an occasional application of powdered tannin, zinc, and starch, will tend to toughen the skin. If the patient lives at a distance from the surgeon it is very important that she learn just how to take care of herself in regard to these various details, before she is sent home, to wait several months before having the fistula closed.

I wish now to present five cases, which are all of this class that have come under my observation, and although

the last two are not yet complete, as the fistulæ still exist, they may serve in some measure to illustrate the subject of this paper.

CASE I. — Miss C. P., aged fifty-eight years, entered the Woman's Hospital in the State of New York in 1874, during my house-surgeonship there, in the service of Dr. J. Marion Sims. She had complained for eight years of frequent micturition; immediately preceding such act there occurred a spasm or cramp, beginning in the urethra and extending over the lower part of the abdomen. Until within a year previous to her admission to the hospital voiding the urine would relieve her for a short period, but since that time the pain had continued somewhat after micturition. The physician who referred her to the hospital had considered it a case of malignant disease of the bladder. The uterus was found retroverted, and Dr. Emmet, who saw the case in consultation with Dr. Sims, thought possibly this accounted for the frequent micturition by the traction thus occasioned on the anterior vaginal wall and urethra. Neither confirmed the diagnosis of malignant disease. The uterus being kept in position by a Hodge closed pessary, some relief was obtained; that is, she was obliged to get up less frequently at night, although the pain was unrelieved when she urinated.

October 4, 1879. — She entered my service in the Free Hospital for Women, suffering as much as ever from the pain formerly complained of, which had troubled her more or less since her discharge from the hospital in New York.

October 16. — She was examined under ether with Skene's endoscope, and the diagnosis made of hyperemia of the vesico-urethral membrane; the other parts of the urethra and bladder were perfectly healthy. She had continued to wear the Hodge pessary, as she found from its use relief to her backache. For the next two months applications of tannin and glycerine, iodoform, impure carbolic acid, and a ten per cent. solution of nitrate of silver were in succession made to the diseased part, either applied on a bit of cotton wound on the applicator, or in urethral suppositories, or by means of a fine spray. These local treatments were given at intervals of a week, but had not the slightest beneficial effect; on the contrary, the patient's suffering seemed to be increased.

Early in December, 1879, I made a vesico-vaginal fistula, after

the manner already described, except, on account of the great laxity of the tissues, there was an unusual amount of oozing of blood, and the thermo-cautery was applied to the edges of the wound. There was a slight discharge of blood from the wound for four days, but the pain was relieved from the first establishment of the fistula. Considerable difficulty was experienced in keeping up a free flow of urine, on account of the firm closure of the ostium vaginae and the laxity of the vaginal membrane, which often closed the fistula, or retained a large amount of urine in the vagina that caused some discomfort; but it was always quickly relieved by passing the finger into the vagina, and thus allowing the urine to escape. An attempt was made to overcome this difficulty by adjusting a tube in the vagina, the outer end of which projected beyond the labia; but it became rapidly coated with phosphatic deposit, thus irritating the parts to such an extent that its use was discontinued, and the only additional treatment given was the hot-water douche through the urethra.

By May 3, 1880, the endoscope showed the neck of the bladder so nearly well that no attempt was made to keep the fistula open, and the use of the hot water was given up. Within a month the fistula had so nearly closed that it was with difficulty that the point of a Simpson's sound could be passed through it. At night, and after lying down during the day, nearly all of the urine was passed through the urethra without causing the patient discomfort. Examined with the endoscope the vesico-urethral membrane looked perfectly healthy, all appearance of the hyperemia having disappeared.

June 3, 1880, the fistula was closed, eleven silver sutures being used for the purpose. A week later, on removing the stitches, the operation was found to have been unsuccessful, and she was discharged June 22, to be readmitted in the fall.

October 22, 1880, she having entered the hospital a few days previously, another attempt was made to close the fistula by the use of nine silver sutures, which resulted in a perfect union, and the urine being passed perfectly naturally she was discharged, cured, November 26, 1880.

CASE II. — Mrs. P. J., thirty-five years of age, had given birth to no children, but had had an abortion at the third month about a year after marriage. She had been under the care of Dr. Sims for anteversion of the uterus at intervals for three years, who had relieved her of the symptoms from which she then suffered by

the use of a modification of an Albert Smith's pessary. After wearing this support for about two years she began to complain of some frequency in passing the urine, she having formerly been able to go all day without urinating. On consulting Dr. Sims she was told "that she had worn the pessary too long a time," and it was therefore removed. But the frequency in the micturition steadily increased, and within a few months there was added to this symptom dysuria, and being obliged to wait some time before she could accomplish the act after the desire to urinate was felt. Dr. Sims then found it necessary to dilate the urethra, which gave the patient complete relief for six weeks, when all the symptoms returned as severe as ever. Within a year previous to my seeing her, the urethra had been dilated three times by a most eminent surgeon of Boston, but without benefit; in fact, she thought herself a greater sufferer after the dilatations.

March 20, 1879, I was asked to see her in consultation with Dr. S. G. Webber, of Boston, who had carried out most faithfully and successfully a course of treatment for the building up of her general nervous strength, which was in a most deplorable condition; the frequent and painful micturition still continuing he desired my counsel. She was then obliged to pass the urine each hour through the day, and from sixteen to twenty times at night, being awakened from a sound sleep by the strong desire to urinate. Finding that not only was she relieved of the pain by the use of morphine, but that the interval of voiding the urine was lengthened to two or three hours, she had made use of this drug, and Dr. Webber had had the greatest difficulty in its discontinuance. A physical examination showed no sensitiveness, either bimanually or on the passage of the sound into the bladder, and I was inclined to consider the case one of chronic contraction of the bladder, particularly as careful inquiry revealed the fact that there was never more than a very small quantity of water passed at any one time, irrespective of the interval. I therefore advised gradual dilatation of the bladder, by injections of warm water, and the correction of the anteversion, which still existed, by the adjustment of a support.

October 7, 1880, the patient came under my immediate care, and a careful revision of the history of her case showed that for about four months after the use of the warm water in the bladder, as well as for a very short time while having electricity applied to the neck of the bladder, in Paris, she was somewhat relieved

from the pain and other inconveniences, but with the exception of those periods she had steadily grown worse. It also revealed the fact that to her knowledge, with all the various surgeons, both in this country and abroad, under whose care she had been, none had visually examined the neck of the bladder. This was accordingly done by the aid of Skene's endoscope, and a very vascular state of that part found, although all the other portions of the urethra and bladder were healthy. For the next five weeks efforts were made to overcome the hyperemia by local applications given in the form of spray, in order to reduce to the minimum the amount of necessary irritation resulting from the treatment; but all to no purpose, for she grew steadily worse. I then made a fistulous opening into the bladder, through the vagina, which gave relief as soon as the swelling dependent upon the operation had subsided. She was instructed in the use of the hot water through the urethra, but, as the fistula showed no tendency to close, it was thought unnecessary to pass the finger through it. A very troublesome thing in the subsequent treatment of this case was the great irritability of the skin and the vaginal membrane, which made it extremely difficult to adjust any urinal, while most of the remedies which are usually relied upon to protect or toughen the skin only added to the irritation. Great suffering was induced by the urine flowing over the skin, which seemed to her like fire, in spite of every attempt to make it bland by medication, and by the pressure against the neck of the bladder when any attempt was made to stop the flow of urine through the fistula and collect it in the bladder, in order temporarily to shield the skin. I can truly say that I have seldom seen a patient in so pitiable a condition. It was not, then, without strong misgivings of the success of the treatment, that I consented to close the fistula on the 1st of June. This I should have been unwilling to do had I not felt that, as the hot weather approached, the irritability of the skin would be likely to increase. It was utterly impossible to keep the patient quiet after the operation, and on the 9th of June, when the sutures were removed, I was not surprised to find that a small opening still existed, though so small that it barely admitted the finest probe. Within a month, however, this minute fistula had closed, and the patient was passing the urine free from pain, but still with some frequency. Through the summer she gained much in nervous strength and physical health, and quite

recently I have heard that she is in better health and more free from local disturbances than she has been for years.

I cannot but feel that it was a fortunate thing in this case that the operation for closing the fistula did not entirely succeed, for I believe that thereby the strain was much diminished in the force of the urine coming against the neck of the bladder, and a month of time was gained in gradually securing the tolerance of that part, during which the small fistula acted as a safety valve to the bladder.

CASE III. — *March 9, 1880.* — Mrs. D. S. consulted me and gave the following history: She was twenty-five years of age, had been married five months, but had never been pregnant. She had been employed as a teacher, and was accustomed to hold the urine all day without inconvenience. On her wedding journey, a long and very fatiguing one, she had an attack of diarrhea, for which she took medicine. This was followed by an obstinate constipation, lasting five days; during this time she went frequently to the water-closet, and strained a great deal in her attempt to defecate, which finally she accomplished by the aid of some cathartic; then for the first time she complained of pain in passing the urine; this she thought might have been immediately excited by the dyspareunia which she suffered. The dysuria followed the act of micturition, and at first lasted but three or four minutes, but gradually increased, and then the frequency began, and she was obliged to urinate every ten or fifteen minutes. Returning home as speedily as possible, she went through the different stages of an attack of acute cystitis, for which she was treated by different physicians, and which finally yielded, as was evidenced by the condition of the urine, although the pain which she suffered was as severe as at any time, occurring more particularly just before and after the act of micturition; the frequency in passing the urine still, however, annoyed her.

I advised an immediate examination of the urethra and bladder with the endoscope, which was acceded to March 13, and the patient was accordingly etherized, when the condition of hyperemia of the vesico-urethral membrane was found to exist, and the bladder membrane also looked slightly injected. An application of a ten per cent. solution of nitrate of silver was made to the neck of the bladder. For two days after this treatment the patient was comparatively comfortable, but then all the symptoms returned.

March 21 she was etherized again, and rapid dilatation of the urethra was performed with Simon's plugs, which instead of benefiting her unfortunately made her so much worse that within a few days the act of micturition was accompanied by such severe pain that it became necessary to administer ether whenever the urine was to be passed. I advised the formation of a vesico-vaginal fistula, which operation Dr. J. C. Warren kindly performed for me, as I felt it unwise to operate myself, having the care of a case of septo-pyemia at the time. The relief, although not as immediate as in the other cases, was realized within a few days; but the pain was started up again when the attempt was first made to use the hot water through the urethra. The edges of the fistula healed readily, and there was very little tendency to phosphatic deposit. Having been taught to keep the fistula open and to use the hot douche, she was sent into the country to rest and regain nervous strength until the following fall, a urinal having been adjusted by Dr. Bullard, to whom I was greatly indebted for assistance in the care of the case.

November 5, 1880, the patient returned to the city looking fat and exceedingly well. She had repeatedly tested the tolerance of the neck of the bladder by keeping the finger over the fistula until an amount of urine had collected in the bladder, when it was forced through the urethra without causing the slightest pain.

November 8 the fistula was closed with silver sutures; subsequently there was some indication of an attack of acute cystitis, occasioned by the operation; it was, however, controlled by the free use of benzoate of ammonium. On removing the sutures, on the eighth day, a minute opening was found still to exist at the anterior angle of the wound. Two months later the operation was repeated, resulting in a complete success. Five or six months, however, were required for her to regain the nervous strength which she lost by the two operations and the necessary confinement, but subsequently she made no complaint of her former troubles, and in July, 1882, I was assured by Dr. H. J. Barnes, who had then recently had charge of her in a supposed miscarriage, that there had been no return of the former irritability of the bladder.

CASE IV. — Mrs. S. F. was thirty-seven years of age, and had been married sixteen years. She had one child four years after marriage, and one abortion at the third month two years later.

There was a history of phthisis on her father's side, but the patient had always enjoyed good health up to two years previous to her consulting me, November 8, 1881. Her strength was at that time much taxed by the care of her mother through a serious illness which required her to be lifted a great deal, and it was to this severe exertion that she attributed the beginning of her trouble, for then began pain on passing the urine, at first confined to the act, but gradually extending after micturition, until within six months she suffered almost constantly with severe pain in the bladder. The process of urinating was also very frequent, and the pain was not at all relieved by that act. It was only with the greatest difficulty that she could walk, and she could not take an erect position on account of the greatly increased pain which was thereby occasioned. Her physician had repeatedly examined the urine for pus, so exactly like cystitis were her symptoms, but had as frequently failed to find evidence of that disease. She had resorted to morphine to control the pain, which she was obliged to take in large quantities, for it was only when thoroughly under its influence that she could be made at all comfortable. Under ether, by the aid of Skene's endoscope a diagnosis similar to the other cases reported was made. As the patient could not then remain for treatment, she was advised to return as soon as possible and have the operation for fistula performed, if the milder applications should prove ineffectual.

She entered the Free Hospital for Women April 12, 1882, suffering more, if possible, than when seen in November. On reëxamining the case by the vagina I found great sensitiveness at the neck of the bladder, and by the endoscope a similar condition to that found before. From April until May applications were made once a week with the atomizer, as in other instances, but without the slightest benefit resulting.

May 1 an artificial vesico-vaginal fistula was made, and the relief was immediate and perfect. She required no more morphine, she was able to sleep, her appetite returned, and she became one of the most cheerful as well as grateful patients that I had ever seen. Eleven days after the operation she began to complain of great irritation and soreness of the passages, and on examination I found that the wound had not been well cared for by my house surgeon, and was thickly coated with phosphatic deposit. On removing some of this, together with considerable thick mucus from the vagina, several small superficial sloughs

were found about the wound, which had undoubtedly occurred from the low state of vitality of the patient, and to the resulting denuded surface were attached quantities of the same deposit from the urine. Much patience and care were required in removing this irritating substance. By a generous amount of cod-liver oil, iron, quinine, and stimulants, as well as food, it was astonishing how rapidly the local condition improved; for within three weeks she was sent home, the wound having entirely healed, and she having learned the necessary care of herself in order to derive the permanent benefit to be realized after the fistula should be closed. I have recently heard that she is steadily gaining, and hopes to come to the city, for the closure of the fistula, during the fall of the present year.

CASE V. — Mrs. H. M. F. consulted me February 11, 1882. She was twenty-five years of age, and had been married two and one half years. She had never been pregnant. Her family history was good, and her own health was excellent up to her twenty-first year, when she fell on the ice, and was ill in bed for three months with "some nervous and spinal trouble." About that time she traveled in Europe for five months, but returned worse than when she left home, her great complaint being constant pain in the lower part of the back, "at times streaming up the spine," both symptoms being increased by exercise. These discomforts were present when she was married, and two weeks after that event, while journeying abroad, having retained the urine one day a very long time, she suffered great distress from so doing, and from that period complained of an almost constant desire to pass the water, which was very much aggravated if any attempt was made to retain it even a moment after this desire was experienced. She was obliged to urinate as often as every ten minutes during the day, and from twenty to thirty times at night. Pain was felt just before and at times during the act of micturition. During the preceding two years there had been two attacks after taking cold, when urinating was "like the passage of fire." A physical examination of the patient showed the usual tenderness over the spine present in a neurasthenic case, while by the vagina pressure of the neck of the bladder gave extreme sensitiveness. A somewhat concentrated urine was corrected by diluents, without affording any relief, and February 24 ether was administered and the urethra and bladder were examined with Skene's endoscope. This revealed a very hyperemic state

of the vesico-urethral membrane, which was otherwise healthy. By means of an atomizer a ten per cent. solution of nitrate of silver was applied to the diseased part. One week later, no relief having been experienced from the treatment, under ether a vesico-vaginal fistula was established. There was entire relief from pain from the time of the operation, and on March 20, the patient having been taught the usual details of the care of her case, and a urinal having been adjusted, she was sent home to carry out the treatment for some months. Some delay in the healing of the edges of the wound was experienced from the great tendency to the formation of phosphatic deposit. July 15, 1882, word was received that the patient was doing very well; that she had increased in flesh and strength, and would consider herself well except from the inconvenience of the constant flow of urine, which she desired to have overcome by the closure of the fistula. She was advised, however, to wait two months longer.

Several details in the preceding cases, being common to all, have been omitted, as it was thought their consideration would be facilitated by a postponement of them until the individual cases were completed; to these, together with facts which have been suggested by the histories and treatment of these five patients, I would now invite your attention.

A careful analysis of the urine was made in each case, and it was found either absolutely normal or simply concentrated, the latter condition being readily overcome by diluents. In all except Case I., where menstruation had ceased, the dysuria was intensified for a few days before the catamenia, and greatly relieved while the activity of the flow continued. Cases I. and II. were the only ones where any uterine disease existed as a complication, and in these the rectification of the misplacement failed to relieve the patient. In all except Case IV. the patients were naturally of a very nervous temperament. The mucous membrane in every case was very thin and delicate. In each case the patient was relieved by the establishment of the fistula. In no case where the fistula was closed was the catheter used after the operation.

As a summary of this paper I would present the following conclusions : —

In every case where a chronic state of irritability of the vesical neck is present, a careful examination with the endoscope should be made.

Before resorting to rapid dilatation of the urethra for the relief of a supposed fissure, make sure of the diagnosis.

In cases of hyperemia of the vesico-urethral membrane that do not yield speedily to mild local treatment, put the part at absolute rest by the formation of a vesico-vaginal fistula.

The fistula once created, do not allow it to close until the hyperemia has entirely disappeared, and the nervous strength of the patient has become thoroughly established.

